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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/919,699	07/31/2001	Donald J. Milligan	10006051-1	5384

7590

12/02/2002

HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
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EXAMINER

NGUYEN, LAM S

ART UNIT

PAPER NUMBER

2853

DATE MAILED: 12/02/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/919,699

Applicant(s)

MILLIGAN ET AL.

Examiner

LAM S NGUYEN

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 September 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 1-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities: The "SUMMARY OF THE INVENTION" section is missing. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 15-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murthy et al. (US 5658471) in view of Mantell et al. (US 5867192).

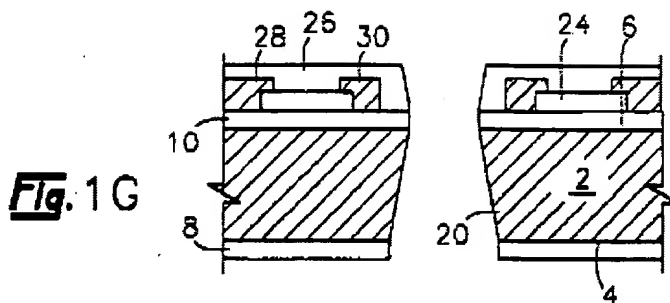
Murthy et al. disclose a fluid ejecting device comprising:

a silicon substrate having <100> crystalline orientation (FIG. 1G, element 2, and column 1, line 44-45),

a plurality of fluid drop generators (FIG. 1G) formed on a first surface of said silicon substrate,

a fluid feed slot extending from a second surface of said silicon substrate to said first surface (FIG. 1G, element 20) having an opening at the first surface having a width W1 (FIG. 4B, element 48) that is less than a width W2 (FIG. 4B, element 46) of an opening at the second surface.

Referring to claims 16 and 18: wherein W1 is about 100 micrometers or less (column 8, line 45-50).

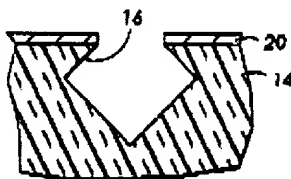


Referring to claims 19 and 20: wherein W12 is about 300 micrometers or less (column 8, line 45-50).

Referring to claims 23 and 26: wherein a longitudinal extent of the fluid feed slot is aligned with a $\langle 100 \rangle$ plane of the substrate (FIG. 1G).

Murthy et al. do not disclose that said fluid slot formed by deep reactive ion etching followed by anisotropic wet etching, wherein the fluid feed slot has a diamond shape (referring to claims 21, 24), wherein the fluid feed slot has a width at a location intermediate the first surface and the second surface which is larger than width W1 (referring to claims 22, 25).

Mantel et al. disclose the process of making cavities having diamond shape with a width at a location intermediate of two surfaces larger than the widths of two openings (FIG. 2B) in a $\langle 100 \rangle$ silicon wafer (column 4, line 6-9). The cavities are formed by deep reactive ion etching process followed by anisotropic wet etching process (column 3, line 43 to column 4, line 23).



Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to form the ink feed slots disclosed by Murthy et al. by the process of the deep reactive ion etching followed by anisotropic wet etching as disclosed Mantell et al. The motivation of doing so is to form ink feed slots having a relative small opening and a special shape for optimal performance as taught by Mantell et al. (column 1, line 5-8 and column 2, line 1-5).

Conclusion

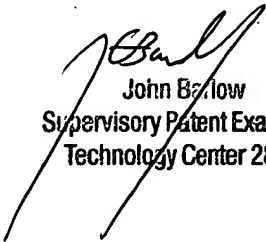
Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM S NGUYEN whose telephone number is (703)305-3342. The examiner can normally be reached on 7:00AM - 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JOHN E BARLOW can be reached on (703)308-3126. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-3431 for regular communications and (703)305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

LN

November 25, 2002


John Barlow
Supervisory Patent Examiner
Technology Center 2800